Effectiveness of Progressive Muscle Relaxation on Inducing Sleep among Cancer Patients in Selected Hospitals of Pune City

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ABSTRACT

Sleep disorders such as difficulty falling asleep. Problems maintaining sleep, poor sleep efficiency, early awakening and excessive day time sleepiness are prevalent in patients with cancer. Sleep disturbance in cancer is common and challenging condition that significantly adds to the burden of suffering experienced by patients with advanced stage disease. Progressive Muscle Relaxation is a mind-body technique that involves slowly tensing and then relaxing each muscle group in the body. Typically used to tame stress, PMRT is said to increase your awareness of the sensations associated with tension. To assess the sleep problems in Cancer patients, to assess the effectiveness of Progressive Muscle Relaxation Technique on inducing sleep among cancer patients and to associate the effect of Progressive Muscle Relaxation Technique with the selected demographic variables. Quantitative approach and Quasi Experimental one group Pre-test and Post-test research design was employed. Non-probability convenient sampling technique was employed to select 40 samples. Instrument used: Progressive Muscle Relaxation Technique. Sleep Assessment Scale. Sleep problem assessment tool. all the 40 subjects of the study majority of them were falling in Dissatisfied Sleep 31(77.5%), 9[22.5%] subjects were falling under Disturbed sleep and no were falling under Sound Sleep category. Section C reveals that there is a significant decrease in the post-test score (mean 30.7) of subjects after administration of Progressive Muscle Relaxation Technique compared to pre- test score (mean 55.62). Hence the Hypothesis H_1 is accepted that is Progressive Muscle Relaxation Technique is effective to induce sound sleep. There is no significant association between the Effect of Progressive Muscle Relaxation Technique and the demographic variables. Hence regular muscle relaxation exercise can help the patient induce sleep and maintain in their healthy sleep pattern.

Keywords- Cancer, sleep pattern, progressive muscle relaxation, stress, insomnia, dissatisfied sleep.

INTRODUCTION

Sleep disturbance in cancer is common and challenging condition that significantly adds to the burden of suffering experienced by patients with advanced stage disease. Sleep orders may be primary or more commonly a secondary symptom of the advancing disease process. The disease nature of patients makes management of sleep disorders particularly challenging and highly individualized. [1]

Progressive Muscle Relaxation is a mind-body technique that involves slowly tensing and then relaxing each muscle group in the body. Typically used to tame stress, PMRT is said to increase your awareness of the sensations associated with tension. Indeed, a number of studies show that regular practice of Progressive Muscle Relaxation Technique may help to keep stress in check as well as treat stress related health problems like Insomnia and Anxiety. [2]

Progressive Muscle Relaxation Technique is an exciting field in which nursing skills can be practiced and demonstrated. Nurses can make a significant contribution to the patients who are undergoing palliation, many in the prime of life, by helping them to have a peaceful and

healthful sleep, recover and resume living in a productive way with a new zest of life. [3]

OBJECTIVES OF THE STUDY:
To assess the sleep problems in Cancer patients, to assess the effectiveness of Progressive Muscle Relaxation Technique on inducing sleep among cancer patients and to associate the effect of Progressive Muscle Relaxation Technique with the selected demographic variables.

HYPOTHESIS:
H_0 – There is no significant difference between the mean pre-test score and mean post-test score in terms of effect of Progressive Muscle Relaxation Technique on inducing sleep.

H_1 – The pre-test score of the participants will be significantly high than the post-test score in terms of effect of Progressive Muscle Relaxation Technique on inducing sleep.

RESEARCH METHODOLOGY
Quantitative approach and Quasi Experimental one group Pre-test and Post-test research design was employed.

SAMPLING
The sample comprises of the patients in advanced stage / 3rd and 4th Stages of cancer who fall under disturbed and dissatisfied sleep categories and are admitted for treatment in Bharati Hospital and Jehangir Hospital of Pune city. Non-probability convenient sampling technique was employed to select 40 samples.

INSTRUMENT USED:
Progressive Muscle Relaxation Technique, Sleep Assessment Scale and Sleep problem assessment tool.

DATA COLLECTION TECHNIQUE AND TOOLS USED FOR DATA COLLECTION:
Prior permission was obtained from the Medical Director of setting of the study, The list of the cancer patients admitted in respective wards for the treatment was obtained, All the patients were given the sleep assessment scale and The patients falling under disturbed and dissatisfied sleep categories were included in the study.

A pre-test was given to the group. Progressive Muscle Relaxation Technique was given for seven days. After a week, a post-test was given to the group. The Sleep Problem Assessment Tool is used for the post-test was the same which was used for the pre-test.

DESCRIPTION OF THE TOOL:
The tool for data collection consists of 3 sections. Demographic Data, Sleep Assessment scale and Sleep Problem Assessment tool.

a) Section B: It consists of 7 questions that help to identify the sleep disturbances of the sample. This section is developed and modified from Insomnia Severity Index, which is a standard tool developed by Dr. Charles M. Morin Ph. D, Canada.

b) Section C: This section consists of 25 questions constructed based on the various factors that include.

A. Physical factors - 44% - 11 questions.
B. Psychological factors - 24% - 6 questions.
C. Economic factors -16% - 16 questions.
D. Environmental factors - 8% - 2 questions.
E. Spiritual factors - 8% - 2 questions.

Considering the above mentioned factors this section contains of modified standard questionnaire constructed from the following standard tools.

Sleep disorders questionnaire: Developed by Dr. Alan Douglass M. D. Royal Ottawa Hospital, Canada. and Pitts burgh Sleep Quality Index: Developed by Dr. DJ. Buysse. Pitts burgh, PA.

RELIABILITY:
Cronbach's alpha formula for internal consistency. The questionnaire was found to be reliable as computed was Section B α = 0.91 & Section C α = 0.88

PROCEDURE FOR DATA COLLECTION:

a) Written informed consent of participants was taking to confirm their willingness to participate in the study.
b) Structured questionnaire was administered i.e. Section B sleep assessment scale to differentiate the subject with distributed and dissatisfied sleep structured questionnaire Section C was given as Pre-test.
c) Demonstration of Progressive Muscle Relaxation Technique to the subjects / participants for a week twice a day for a period of 30 minutes.
d) Each patient was met individually and the entire procedure and its importance were clearly explained to them.
e) Every day 3-5 patients were given Progressive Muscle Relaxation in their respective admitted area.
f) Post-test was conducted offer a week for all the participants to assess the effectiveness of PMRT on sleep.

RESULT AND DISCUSSION

SECTION- A

Table no.1: Frequency and percentage distribution of cancer patients according to socio-demographic variables.   n=40

S.NO.	VARIABLES	FREQUENCY	PERCENTAGE
1.	**AGE**		
	20-29yrs	3	7.5%
	30-39yrs	7	17.5%
	40-49yrs	15	37.5%
	50-59yrs	11	27.5%
	60yrs and above	4	10%
2.	**GENDER**		
	Male	24	60%
	Female	16	40%
3.	**EDUCATIONAL STATUS**		
	Literate	31	77.5%
	Illiterate	9	22.5%
4.	**OCCUPATIONAL / PROFESSIONAL / RESIDENTIAL ENVIRONMENT**		
	Noisy	6	15%
	High Radiation Exposure	3	7.5%
	Peaceful & Harmonious	24	60%
	Stressful / Irritable	7	17.5%
5.	**MARITAL STATUS**		
	Un married	1	2.5%
	Married	35	87.5%
	Divorced/Separated	0	0%
	Widow / Widower	4	10%
6.	**SUBSTANCE ABUSE**		
	Tobacco use	8	20%
	Alcohol consumption	7	17.5%
	Both of above	12	30%
	Any other...	0	0%
	None	13	32.5%
7.	**TREATMENT UNDERGOING**		
	Chemotherapy	38	95%
	Radiation therapy	0	0%
	Both of above	2	5%
	None	0	0%
8.	**FAMILY HISTORY OF CANCER**		
	Present	10	25%
	Absent	30	75%
9.	**HEALTH RELATED PROBLEMS OTHER THAN CANCER**		
	Present	13	32.5%
	Absent	27	67.5%
10.	**MEDICATION USE FOR SLEEP**		
	Present	0	0%
	Absent	40	100%
11.	**PRACTICES FOR SLEEP**		
	Present	0	0%
	Absent	40	100%

The data presented in table 1 indicates majority of subjects 15[37.5%] belong to the age group 40-49yrs and minimum 3[7.5%] belonged to age 20-29yrs. Majority of the subjects were males 24[60%] and the remaining were females 16[40%]. Majority of the subjects were literates 31[77.5%] and the remaining were illiterates 9[22.5%]. Majority of the subjects were from peaceful and harmonious environment 24[60%] and minimum were from High radiation exposure environment. Majority of the subjects were married 35[87.5%] and minimum were unmarried 1[2.5%]. Majority of the subjects have no habit of any kind of substance abuse 13[32.5%] and minimum have the habit of Alcohol consumption 7[17.5%]. Majority of the subjects were undergoing Chemotherapy 38[95%] and minimum were undergoing both chemotherapy and radiation therapy 2[5%]. Majority of the subjects do not have the history of family cancer 30[75%] and minimum have the cancer family history 10[25%].Majority of the subjects do not have any other health problems other than cancer 27[67.5%] and minimum have other health related problems 13[32.5%]. Majority of the subjects do not have the habit of any kind of medication use for inducing sleep 40 [100%]. Majority of the sample do not have the habit of following any sleep inducing practices 40[100%].

SECTION: B: DISTRIBUTION OF SLEEP ASSESSMENT SCALE SCORES OF SUBJECTS

Table no 2: Frequency and percentage distribution of Sleep Assessment Scale scores of subjects n= 40

SLEEP PATTERN	Frequency	Percentage
Sound Sleep [0-9]	0	0%
Disturbed Sleep[10-19]	9	22.5 %
Dissatisfied Sleep[20-28]	31	77.5 %
Total	40	100 %

Table no 2 reveals that of all the 40 subjects of the study majority of them were falling in Dissatisfied Sleep 31(77.5%), 9[22.5%] subjects were falling under Disturbed sleep and no were falling under Sound Sleep category.

SECTION: C: DISTRIBUTION OF SLEEP PROBLEM ASSESSMENT SCORES OF SUBJECTS

Table no 3: Frequency and percentage distribution of Sleep Problem Assessment Tool scores of subjects. n=40

SLEEP PROBLEM SCORE	Pre-test	Percentage	Post-test	Percentage
NO PROBLEM(0 – 25)	0	0%	6	15%
MILD (26 – 50)	9	22.5%	34	85%
MODERATE (51 – 75)	31	77.5%	0	0%
SEVERE(76 – 100)	0	0%	0	0%
Total	40	100%	40	100%

Table no 3 reveals that of all the 40 subjects, during pretest according to scoring pattern were 9(22.5%) were falling under mild sleep problem category, 31(77.5%) were falling under moderate sleep problem category and none were under no sleep problem and severe sleep problem categories

During post-test of all 40 subjects 6(15%) were falling under No sleep Problem category, 34(85%) were falling under Mild Sleep Problem category and no one were falling under Moderate and Severe sleep Problem categories.

TABLE No. 4 Mean, Median and Standard Deviation of Pre and Post test

S.NO.	FINDINGS	MEAN	MEDIAN	STANDARD DEVIATION
1	PRE- TEST	55.62	54.5	6.28
2	POST- TEST	30.7	31	5.4

Table no. 4 shows the average post-test score of the participants is significantly low than average pre- test score in terms of effect of Progressive Muscle Relaxation Technique on inducing sleep.

Hence the Progressive Muscle Relaxation Technique on inducing sleep among Cancer patients is significantly effective.
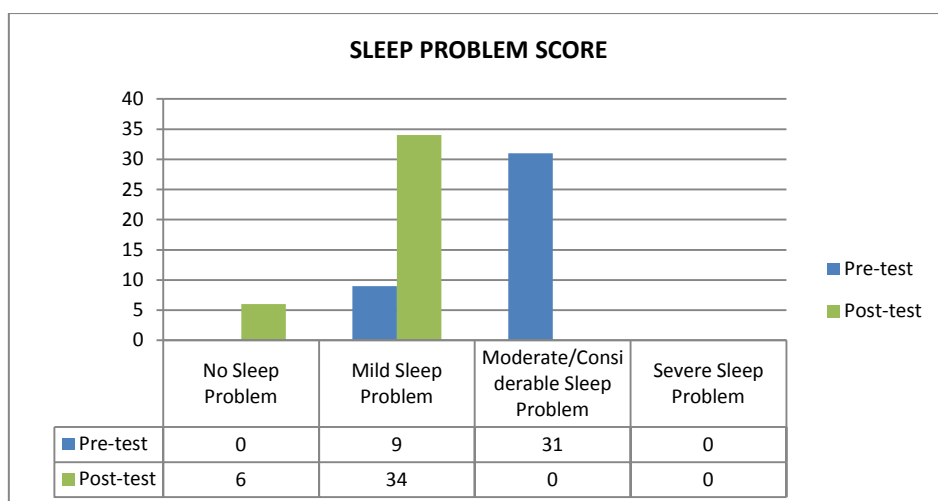
Graph 1: Bar graph showing Frequency distribution of Sleep Problem Assessment Tool scores of subjects

Table no. 5

S.no	Items to Assess Sleep Problems	Item nos.	Z value	P value
1.	Physical Factors	1, 2, 3, 4, 20, 21, 22, 25	-5.353	0
2.	Psychological Factors	5, 7, 12, 18, 19, 23	-5.522	0
3.	Treatment factors	6, 8, 13,	-5.556	0
4.	Economical Factors	9, 10, 11,24	-4.646	0
5.	Environmental Factors	14, 15	-5.458	0
6.	Spiritual Factors	16,17	-4.227	0
Total				

At p<0.05

The test used is The Wilcoxon Mann Whitney rank sum test

Since p value of test statistic < level of significance = 0.05, there is strong evidence to reject the null hypothesis.

The Hypotheses under study are;

The null hypothesis, H_0: There is no significant difference between the average pre-test score & average post-test score in terms of effect of Progressive Muscle Relaxation Technique on inducing sleep.
Vs.

The alternative hypothesis, H_1: The average post-test score of the participants is significantly low than average pre-test score in terms of effect of Progressive Muscle Relaxation Technique on inducing sleep.

The average post-test score of the participants is significantly low than average pre-test score in terms of effect of Progressive Muscle Relaxation Technique on inducing sleep.

Hence the Progressive Muscle Relaxation Technique on inducing sleep among Cancer patients is significantly effective.

SECTION: D: ASSOCIATION OF EFFECT OF PROGRESSIVE MUSCLE RELAXATION TECHNIQUE WITH THE SELECTED DEMOGRAPHIC VARIABLES

Table no 6: Association of the effect of Progressive Muscle Relaxation Technique with demographic variables   n=40

S.NO.	Demographic variable	Chi-square	P- value
1	Age	2.078	0.721
2	Gender	1.336	0.248
3	Educational status	0.502	0.479
4	Environment	1.400	0.706
5	Marital status	1.954	0.376
6	Substance Abuse	1.810	0.613
7	Treatment Undergoing	1.328	0.249
8	Cancer Family history	0.767	0.443
9	Other health problems	0.449	0.503

At p<0.05 level

Table no 6 reveals the results of the association of the effect of Progressive Muscle Relaxation Technique with demographic variables using Kruskal Wallis test. The values in the table show p value >0.05, there is no strong evidence to reject the null hypothesis. This indicates that there is no significant association between Progressive Muscle Relaxation Technique and selected demographic variables.

DISCUSSION

A pre experimental, one group pre-test &post-test design was used to assess the effectiveness of progressive muscle relaxation technique on inducing sleep among cancer patients with an interval of 7 days carried out on 40 cancer patients' from selected hospitals of Pune city.

The following are the major findings of the study

The first objective was to assess the sleep problems in cancer patients. Section B reveals that of the sample subjects 40 subjects falling under disturbed sleep are 9[22.5%], subjects falling under dissatisfied sleep are 31[77.5%]

The second objective was to assess the effectiveness of progressive muscle relaxation technique on inducing sleep among cancer patients. Section C reveals that there is a significant decrease in the post-test score of subjects after administration of Progressive Muscle Relaxation Technique. Hence the Hypothesis H_1 is accepted. Findings reveal that Progressive Muscle Relaxation Technique is effective to induce sound sleep.

Similar study carried out by Meral Demiralp et al in Turkey with the aim to investigate the effectiveness of Progressive muscle relaxation training on sleep quality and fatigue in Turkish women with breast cancer undergoing adjuvant chemotherapy revealed similar results that the Progressive Muscle relaxation group experienced greater increase in improved sleep quality and a greater decrease in fatigue than the control group

The third Objective is to associate the effect of progressive muscle relaxation technique with the selected demographic variables. Section D reveals that there is no significant association between the Effect of Progressive Muscle Relaxation Technique and the demographic variables. All the above findings reveal that Progressive Muscle Relaxation Technique was significantly effective in inducing sleep among cancer patients under study.

CONCLUSION

Based on the analysis of the findings of the study, the following inferences were drawn. Majority of the study samples had several sleep problems owing to the disease and its pathophysiological effects as the Pre-test Scores were higher than the Post-test Scores measured by Sleep Problem Assessment tool. Hence regular muscle relaxation exercise can help the patient induce sleep and maintain in their healthy sleep pattern.

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